University of Wisconsin - Madison  
College of Engineering [EGR]  
Last Offered: 2015-2016 Spring [1164]  
Direct Link to this Syllabus:  
http://aefis.wisc.edu/index.cfm/page/CourseAdmin.ViewABET?coursecatalogid=345&pdf=True

1. ECE 354, Machine Organization and Programming  
2. Credits: 3  Contact Hours: 2.5  
3. Textbook and Materials: 

   A Programmer's View of Computer Architecture, Goodman and Miller.

a. Other Supplemental Materials: None

   • Specific Course Information:
   
   a. Brief description of the content of the course (Course Catalog Description): An introduction to computer organization using assembly and machine language. Number representation, computer arithmetic, instruction sets, I/O interrupts, and programming interrupts. Projects involve detailed study and use of a specific computer hardware and software system.

   b. Pre-requisites or Co-requisites: Comp Sci 302 & ECE/Comp Sci 252  
   c. EE- Elective  
   CMPE- Required

   • Specific Goals for the Course:

   a. Course Outcomes:

      1. Mastery of basic concepts of computer architecture, with emphasis on aspects impacting programming.

   • ABET Student Learning Outcomes:
(a) Ability to apply mathematics, science and engineering principles.
(e) Ability to identify, formulate and solve engineering problems.
(k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

- **Brief List of Topics to be Covered**:

  Number systems; Number representation; Computer arithmetic; Basic instruction cycle; Data types; Instruction types; Addressing modes; Assemblers, linkers, loader; Subroutines, stacks; I/O, traps, interrupts; Floating-point instructions; Instruction set design; Virtual machines, compilation/interpretation